

The logo for PANDROL, featuring the word in a bold, yellow, sans-serif font. The background is dark blue with a yellow geometric shape in the top right corner and a light grey shape in the bottom left corner.

# PANDROL

Partners in excellence

**ANTI –REMOVAL e-CLIP SYSTEMS**

# ANTI-THEFT e-CLIP SYSTEMS

"Pandrol has engineered a number of innovative fastening systems that deter the opportunistic removal of e-clips. These systems are designed to be installed without compromising system performance and ensuring long-term reliability and efficiency."

The Pandrol logo is located in the bottom right corner of the slide. It consists of the word "PANDROL" in a bold, yellow, sans-serif font, set against a dark blue background that is part of a trapezoidal shape.

# REASONS FOR THE SYSTEMS

- **Mitigating Safety Risks:** The loss or tampering of fastening systems can lead to significant safety hazards, potentially compromising the stability and integrity of infrastructure. The Pandrol removal-resistant fastening system minimizes these risks by ensuring secure, long-lasting performance.
- **Reducing Financial Impact:** The loss of fastening systems can result in costly repairs, replacements, and unnecessary downtime. Pandrol advanced fastening solution helps mitigate these expenses by providing a secure, theft-proof design that is easy to maintain and re-install, ensuring cost efficiency over the system's lifecycle.

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# SAFETY RISKS ASSOCIATED WITH FASTENER LOSS



- **Rail Traffic Disruption:** Loss of fastening systems can lead to track instability, causing delays in rail traffic.
- **Train Derailment:** Insecure fasteners or missing clips can lead to derailments, putting trains, passengers, and freight at significant risk.
- **Cargo Loss:** Disruptions or accidents caused by fastening system failures can result in the loss of valuable cargo.
- **Fatalities:** The compromised integrity of the rail system can increase the likelihood of severe accidents, potentially leading to fatalities.
- **Equipment Destruction:** Insecure tracks can damage trains and other rail infrastructure, leading to costly repairs and prolonged downtime.

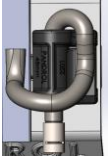
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# FINANCIAL IMPACT OF FASTENER LOSS



- **Increased Track Downtime:** Loss of fasteners can result in extended periods of track unavailability, disrupting service and causing delays.
- **Unplanned Rail Maintenance:** The need for unexpected repairs or replacements due to fastener loss leads to increased maintenance costs and resource allocation.
- **Higher On-Track Security Costs:** To prevent theft or tampering, additional security measures and surveillance may be required, increasing operational costs.
- **Increased Fastener Replacement Costs:** Frequent replacement of lost or damaged fasteners adds to the overall cost of maintaining the rail network.

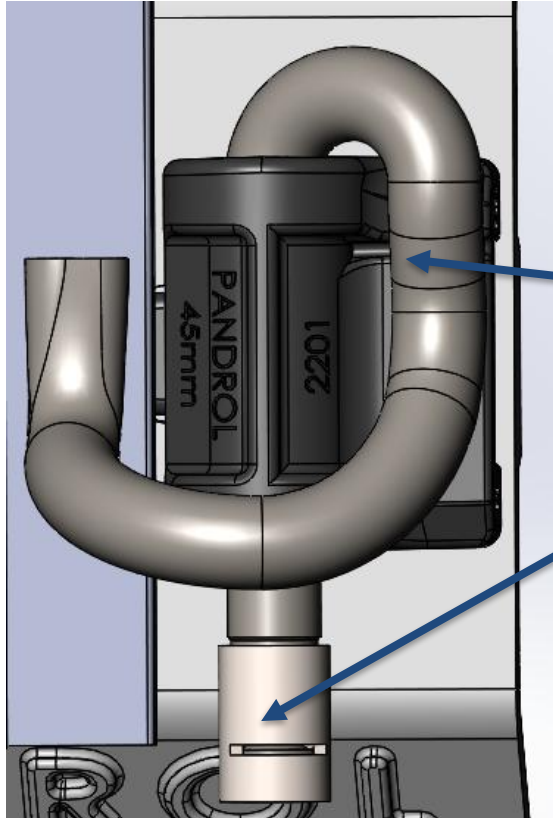
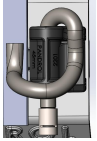
# ANTI-SABOTAGE SYSTEM FEATURES (AS)



- **Clip with Special Heel:** Clip designed with extended heel that is used to fit an anti-removal sleeve
- **Anti-removal Crimp Sleeve:** Sleeve fitted to clip and crimped in place with installation tool to prevent clip removal
- **Special Installation Tool:** A special installation tool has been designed that is used to crimp the sleeve in place. The tool can be manually or hydraulic operated

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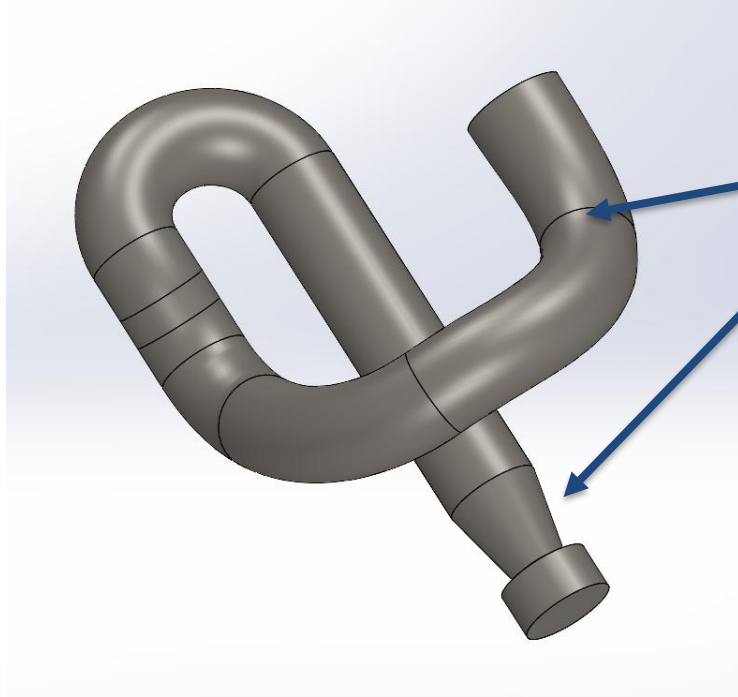
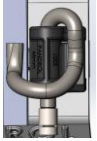
# AS SYSTEM Features



- Anti-Removal Clip
- Anti-Removal Crimp Sleeve

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# AS CLIP Features

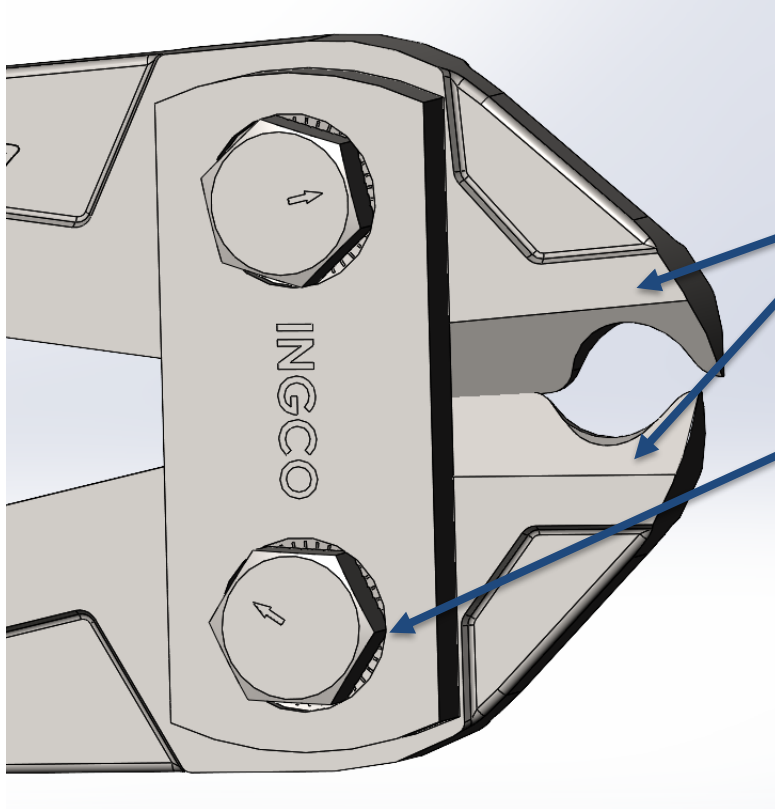
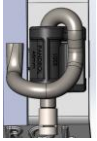


- Anti-Removal clip
- Modified heel to accept anti-removal sleeve

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# AS MANUAL INSTALLATION Tool



- Modified jaws to deform sleeve
- Manual installation tool

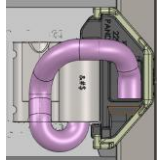
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# ANTI-SABOTAGE SYSTEM BENEFITS

- **Retrofit Capability for Various Sleepers:** The system is designed for easy retrofitting, allowing it to be adapted to a wide range of sleeper types, providing flexibility for different rail networks.
- **Enhanced Track Safety:** The robust fastening system significantly improves track stability, reducing the risk of accidents and enhancing overall safety.
- **Reduced Track Downtime:** Quick and efficient installation processes minimize track downtime, ensuring better service continuity.
- **Effortless Installation:** The system is designed for straightforward installation, making it user-friendly for operators and maintenance crews.
- **Deployed Only Where Needed:** The system can be strategically deployed in areas where it is most required, optimizing cost efficiency and minimizing unnecessary installation.

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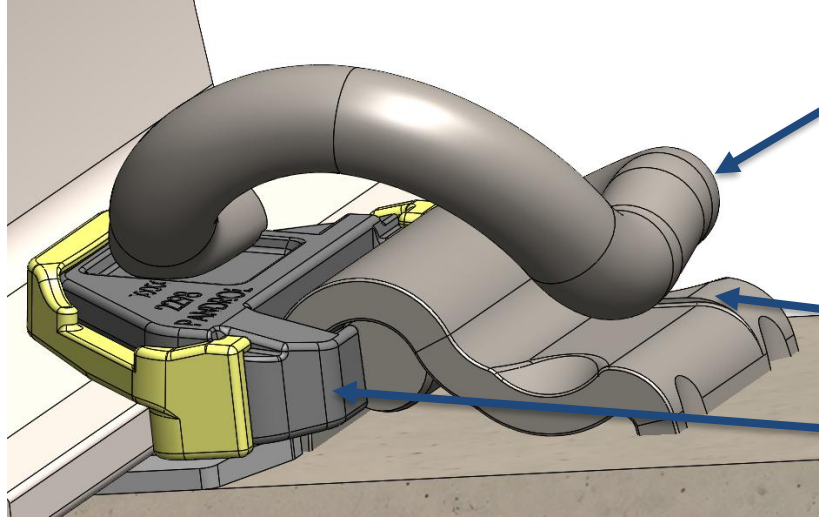
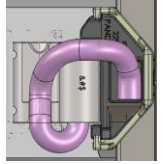
# ANTI-THEFT SYSTEM FEATURES (AT)



- **Clip with Specialized Toe and Heel Design:** Engineered with unique toe and heel features to enhance security and prevent unauthorized removal, ensuring optimal fastening performance.
- **GPI with Composite Assembly:** The fastening system utilizes a GPI combined with a robust composite assembly for superior strength and durability.
- **Specialized Removal Tool:** A custom-designed tool allows for safe and efficient removal of the fastening system during maintenance, without compromising the system's performance upon reinstallation.

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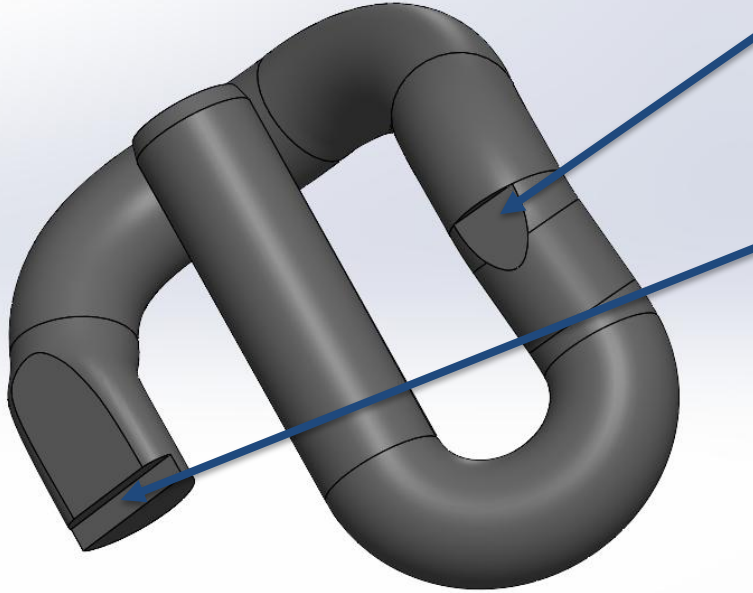
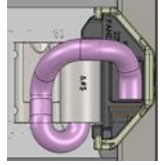
# AT SYSTEM FEATURES



- Anti-theft clip with anti-vandal features
- Anti-vandal shoulder
- Anti-theft GPI with hook to protect clip

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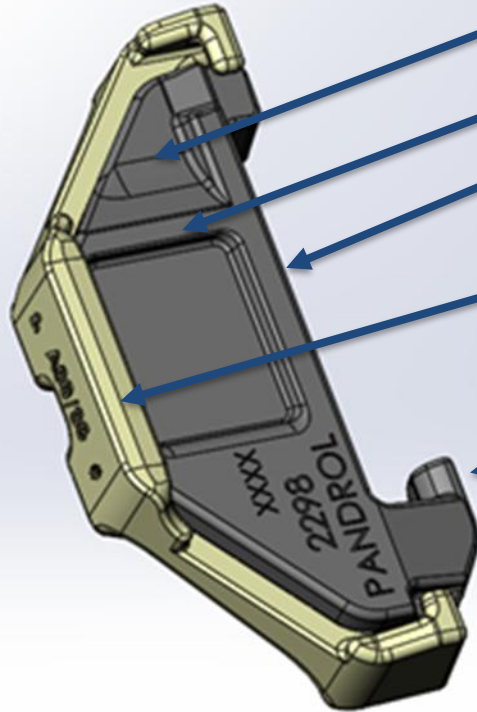
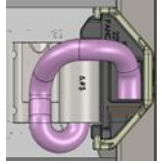
# AT CLIP FEATURES



- Anti-vandal heel to lock onto shoulder
- Step in-toe to lock onto the anti-theft GPI

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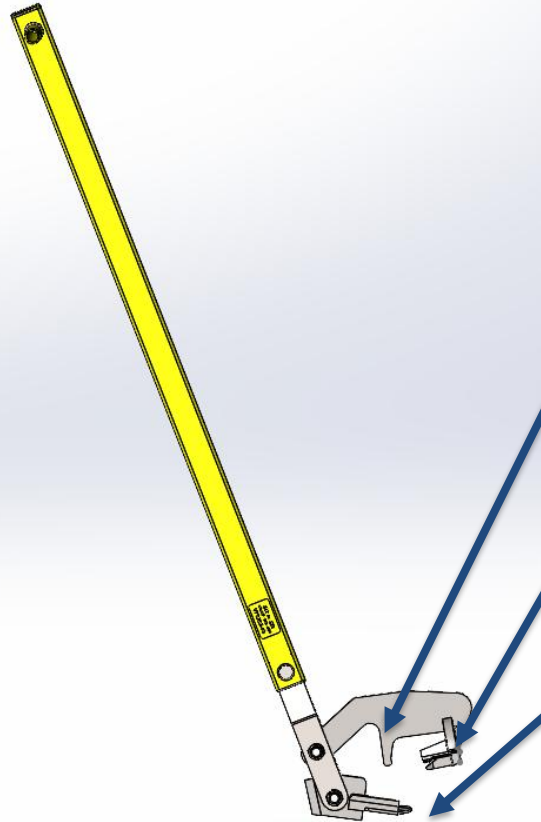
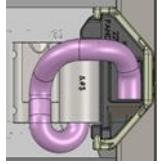
# AT GPI FEATURES



- Ramp to guide toe of clip
- Corner to hold clip in place
- Cast iron insert for strength and rigidity
- Nylon adaptor to cater for insulation, gauge widening and rail types
- Shoulder hook to prevent access to toe of clip and hold GPI in place

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# AT REMOVAL TOOL



- Fitted with hook to assist in extraction
- Double leg to lift heel and toe
- Foot to suit GPI

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# ANTI-THEFT SYSTEM BENEFITS

- **Retrofit Capability for Various Sleepers:** The system is designed for easy retrofitting, allowing it to be adapted to a wide range of sleeper types, providing flexibility for different rail networks.
- **Enhanced Track Safety:** The robust fastening system significantly improves track stability, reducing the risk of accidents and enhancing overall safety.
- **Reduced Track Downtime:** Quick and efficient installation and removal processes minimize track downtime, ensuring better service continuity.
- **Effortless Installation and Extraction:** The system is designed for straightforward installation and removal, making it user-friendly for operators and maintenance crews.
- **Maintenance-Friendly:** The system's design simplifies maintenance, allowing for faster and easier repairs or replacements when necessary.
- **Deployed Only Where Needed:** The system can be strategically deployed in areas where it is most required, optimizing cost efficiency and minimizing unnecessary installation.

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# SYSTEM DESIGNS

- **Tailored towards Operator's Needs:** The systems are specifically designed to accommodate the sleeper shoulders and rail types used by the operator, ensuring a perfect fit and reliable performance.
- **Versatile Moulding Design:** The adaptor design offers flexibility to meet various track angles and gauge requirements, allowing for easy adaptation across different rail configurations.
- **Extensive Range of Developed Adaptors:** A wide variety of adaptors are available, providing for an efficient solution for multiple rail applications and enhancing the system's adaptability.

A large, bright yellow geometric shape, resembling a stylized 'L' or a corner, is positioned in the top right corner of the dark blue background.

[www.pandrol.co.za](http://www.pandrol.co.za)

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